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Educational and Workforce
Outcomes for Marylanders Earning
a High School Diploma Through
GED® or National External Diploma
Program®

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Governor

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EXECUTIVE SUMMARY

This report is intended to serve as a companion to the [Career Preparation Expansion Act \(CPEA\) Report](#), produced by the Maryland Longitudinal Data System (MLDS) Center in collaboration with the Governor's Workforce Development Board. The *CPEA Report* focused on the workforce outcomes of high school graduates five years after graduation. Not included in that population were individuals who earned a high school diploma following successful completion of either the GED® Testing program or the National External Diploma Program® (NEDP®). This report explores the workforce outcomes of GED® and NEDP® diploma earners five years after receiving the diploma and includes their wages earned and the industry in which they were employed.

The GED® and NEDP® diploma earners are distinct from the high school graduate population in several important ways. First, there are fewer of them: 5,126 GED® and NEDP® diploma earners versus the 59,510 high school graduates. Second, the age of the GED® and NEDP® diploma earners range between 18 to 65 and older (with 40% over 25). The high school graduates in comparison were generally all routinely 18 years old at graduation. Third, the rate of college going varied greatly: only 29% of GED® and NEDP® diploma earners enrolled in college during the five years after earning their diploma compared to 76% of the high school graduates. Finally, unlike the high school graduates, a significant portion of GED® and NEDP® diploma earners included inmates at Maryland correctional facilities. In fact, between 2016 and 2018, inmates made up approximately 20% of the individuals who earned a high school diploma through the GED® testing program. As discussed in the report, these differences likely impact the rate and type of work engaged in by this population.

Despite these differences, as with the high school graduate population, to understand the wage outcomes of the GED® and NEDP® diploma earners, the report groups them by their educational attainment during the five years after earning the GED® or NEDP® diploma: no college, some college, still in college, and college degree earners. The median quarterly wages for GED® and NEDP® diploma earners five years after earning the diploma varied significantly by educational attainment group. While the median quarterly wage for the population was \$6,692, those who earned a college degree had a median quarterly wage that was \$2,500 higher. The GED® and NEDP® diploma earners who did not attend college also had a median quarterly wage that was higher than the population - but only \$800 higher. Conversely, those who only had some college and those still in college had a median quarterly wage that was roughly \$600 less than the entire cohort and over \$3,000 less than the college degree earners.

To better understand these wages, the report compares the wages to various wage indicators, such as minimum wage, living wage, and the median wage for all workers. The median wage for all groups exceeded the minimum quarterly wage of \$3,608. However, all of the groups, except the college degree group, had a median wage that was less than the living wage of \$7,913. All groups, including the college degree earners, had a median quarterly income that was less than the median earnings for all Maryland workers. In addition to reporting on the median wage for each educational attainment group, the report also highlights the number of GED® and NEDP® diploma earners who fell above or below the

minimum wage, living wage, and median earnings for all Maryland workers. The fact that 61% of non-college degree earners in the cohort earned a wage that was below the living wage (of which, 19% also earned less than the minimum wage), gives a strong indication of the challenges facing these diploma earners in the workforce. This may be especially significant given the fact that this population is older and not necessarily in the early stages of their career paths.

One important trend observed in the *CPEA Report* is also true with this population: there is no immediate return on the investment (both time and money) in college unless a degree is earned. Students who attempted college but did not earn a degree had a lower median wage at five years than those students who directly entered the workforce. And, unlike students who earned a degree, they do not have the financial reward of higher wages to help offset any costs incurred from going to college. Second, the value of any postsecondary degree is significant; with a median quarterly wage \$3,000 higher (or \$12,000 annually).

In addition to wages, the report also explores the industry of employment of the NEDP® and GED® diploma earners five years after earning their diploma. Close to half of all of the NEDP and GED diploma earners were employed in either the Trade, Transportation, and Utilities sector or the Education and Health Services sector. Educational attainment impacted both the sector of employment and the amount earned in the sector. For example students who did not enroll in college were most often in the Trade, Transportation and Utilities sector and earned a median quarterly wage of \$7,000. The Trade, Transportation, and Utilities sector was also the largest sector for some college and still in college, but the wages were lower by \$200 and \$2,500 respectively. College degree earners were most often in Education and Health Services sector and earned a median quarterly wage of approximately \$9,600. The Goods Producing sector provided the highest quarterly median wages for the no college and still in college groups, while Public Administration sector provided the highest quarterly median wages for the college degree group.

Finally, the report discusses and utilizes new methodologies for analyzing wages, reviews the gaps in the wage data and how those gaps impact the analysis, and discusses the implications of the report and direction for future research.

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INTRODUCTION

Each year approximately 5,000 Maryland high school students withdraw from school without earning their high school diploma¹. The Maryland Department of Labor, Division of Adult Education and Literacy Services (AELS) offers three options for Marylanders to earn their high school diploma through alternative programs. Two of those options, the National External Diploma Program® (NEDP®) and the GED® Testing program, are available to Marylanders who are at least 18 years of age². At the successful conclusion of each program a standard Maryland high school diploma is issued.

Who takes the GED® and NEDP®?

The GED® and NEDP® programs primarily serve adult learners who withdrew from high school or were unable to complete high school graduation requirements by the maximum age of attendance (currently 21 in Maryland). Additionally, the GED® program serves students who were homeschooled or incarcerated. In 2016-17, approximately 27,000 students were registered in Maryland as participating in homeschooling³ and these students will be required to complete the GED® examine to earn a Maryland high school diploma. Annually, approximately 20% of all individuals who passed the GED® are incarcerated⁴.

This report explores the following outcomes for Marylanders who earn their high school diploma through GED® testing or NEDP® assessment five years after diploma attainment:

1. Wages earned; and
2. Industry of employment.

More information on the National External Diploma Program® and the GED® Testing program can be found on the Maryland Department of Labor (DL) website:

<https://www.dllr.state.md.us/gedmd/diploma.shtml>

¹Dropout Rate Trend Data (2012-2018). *Cohort Type: 4-Year Adj Cohort, Gender: All Students, Special Services: All Students, Race and Ethnicity: All Students.* <http://reportcard.msde.maryland.gov>

² Maryland Department of Labor. (2019). Maryland Adult Education High School Diploma Options. <https://www.dllr.state.md.us/gedmd/geddiplomaoptions.pdf>

³ <https://mdhsa.com/resources/maryland-homeschool-stats.php>. The Maryland State Department of Education requires registration of students being homeschooled. It does not collect data on the outcomes of homeschooling.

⁴ According Molly Dugan, the Maryland GED® administrator, the number of inmates passing the GED® examine for the calendar years 2016, 2017 and 2018 was 721 out of 3,395 total passers, 634 out of 3,146 total passers, and 651 out of 3,074 total passers, respectively. The administrator also notes the pass rate for incarcerated testers is about 7-9 % points higher than the general public. (email, February 4, 2019).

Research Agenda Questions

This report is responsive to the following Maryland Longitudinal Data System Center research agenda questions:

- What percentage of Maryland high school exiters go on to enroll in Maryland postsecondary education?
- What are the workforce outcomes for Maryland students who earn a high school diploma (via high school graduation or GED®) but do not transition to postsecondary education or training?

MLDS Data

The MLDS is the State's central repository for student and workforce data. The MLDS System connects data from across Maryland's education and workforce agencies. These data are subject to strict data management, security, and privacy requirements. The MLDS may only report aggregated, de-identified data.

The MLDS Center develops and maintains the System in order to provide analyses, produce relevant information, and inform choices to improve student and workforce outcomes in the State of Maryland. All research conducted by the MLDS Center focuses on what happens to students before and after critical transitions in education to workforce pathways. All research and analysis using the MLDS is cross-sector.

This analysis focuses on the employment of individuals as they move from earning their high school diploma via GED® or NEDP® into the workforce, including whether or not any of the diploma earners enrolled in or completed college. Below is an overview of the available data within the System to support this analysis:

Education Data

The MLDS System contains education data on all students from Maryland public high schools, students attending Maryland public and state-aided independent institutions of higher education and adults completing GED® or NEDP® programs. The System also contains limited information on the out-of-state college enrollment of Maryland public high school graduates. Education data begin with the 2007-2008 school year and are current through the 2017-2018 school year.

The System does not contain education data on students in private high schools or private institutions of higher education. Nor does the System contain data on postsecondary students in continuing education or non-degree seeking programs. Further, data on unsuccessful attempts at fulfilling the GED® or NEDP® requirements are not included in the System. Only information on individuals who fulfill requirements are provided to the MLDS Center.

Wage Data

The MLDS workforce data include quarterly Unemployment Insurance (UI) wages from 2008 through the last quarter of 2018. Unemployment Insurance (UI) filings are only available for employees who work for a business required to file UI. The federal government (including the military), certain non-profits, and self-employed and independent contractors do not file UI. Individuals working in temporary employment are also not subject to UI filings. MLDS data do not include information on out-of-state employment. These data gaps mean it is incorrect to assume that individuals not counted as “employed” in this report are unemployed.

Wage data in the System include North American Industry Classification System (NAICS) codes for employers. This system classifies employers by sector rather than identifies the specific jobs performed by employees. The wage data contained in the System cannot distinguish between part-time and full-time employment, or hourly and salaried wages. The UI data provided do not indicate the number of days a person worked in a particular quarter or the number of hours a person worked in a week.

Contextual Data

Three sources of data were selected to provide context for the results and guide the analysis. Collectively, these sources provide comparison points between the quarterly wage data, minimum wage, the cost of living in Maryland, and overall worker earnings in Maryland. Cost of living and worker earnings are both available at the state-level and the county-level.

MIT Living Wage Calculator

The [Living Wage Calculator](#) developed by the Massachusetts Institute of Technology⁵ provides data on the cost of living in various geographic areas across the United States. The living wage calculator incorporates the cost of food, housing, health insurance, transportation, taxes, clothing and other personal items to derive the minimum annual income required for basic self-sufficiency. It is more comprehensive than traditional poverty measures, which do not incorporate these broader costs of living. More information on the MIT Living Wage Calculator is available on their [website](#). The measure selected from the Living Wage Calculator was “required annual income before taxes” for one adult with no dependent children which was \$31,365 annually or \$7,841⁶ per fiscal quarter in 2018. This income was converted to a quarterly income to align to the MLDS quarterly wage data and is referred to as the “living wage” in the remainder of this analysis.

⁵ Glasmeier, Amy K. (2019). [Living Wage Calculator](http://livingwage.mit.edu/). (<http://livingwage.mit.edu/>) Massachusetts Institute of Technology.

⁶ Values reported in the Living Wage Calculator were \$31,365 annually in 2018 dollars. This was divided to a quarterly wage of \$7,841 in 2018 dollars. Values did not need to be adjusted for inflation.

American Community Survey 5 Year Estimates

The second source of contextual data is the [American Community Survey \(ACS\) 5-Year Estimates, 2012 to 2016](#).⁷ This survey provides extensive data on demographic characteristics, housing, and wages for states and counties throughout the United States. The measure selected from the ACS was “median earnings for workers”. This income measure was converted to quarterly earnings to align to the MLDS quarterly wage data and is referred to as the “ACS wage” in the remainder of this analysis. The ACS median earnings for workers in Maryland was \$42,783 annually or \$10,696 quarterly in 2018.⁸

Minimum Wage in Maryland

The minimum wage in Maryland from July 2017 to June 2018 was \$9.25 per hour. A minimum wage worker employed for 30 hours per week⁹ earns \$3,608 per quarter¹⁰.

⁷ United States Census Bureau. (2016). 2012-2016 American Community Survey 5-Year Estimates. U.S. Census Bureau’s American Community Survey Office. <https://factfinder.census.gov>

⁸ Values reported in the ACS were \$40,893 annually in 2016 dollars. This was divided to a quarterly wage of \$10,223 in 2016 dollars. The values were inflation adjusted to 2018 dollars using the CPI Inflation Calculator provided by the [U. S. Department of Labor, Bureau of Labor Statistics](#) - https://www.bls.gov/data/inflation_calculator.htm.

⁹ The 30 hours per week threshold is the minimum number of hours to be qualified as full-time.

¹⁰ This quarterly wage was derived by multiplying $((\$9.25 \times 30 \text{ hours per week}) \times 52 \text{ weeks in a year})$ and dividing by 4.

Population of Interest

The population of interest is Marylanders who earned their high school diploma through GED® or NEDP® program participation between July 2012 and June of 2013. This is the latest year for which there is five years of post-diploma wage data available for analysis. Slightly more than 5,000 Marylanders earned their high school diploma through GED® or NEDP® during this period. See **Table 1**.

Table 1. High School Diploma by GED® or NEDP®, State of Maryland, 2012-2013, Distribution by Completion Type

Completion Type	Record Count	Percentage
GED® Completions	4,577	89%
NEDP® Completions	549	11%
Total	5,126	

The GED® and NEDP® diploma earners were disaggregated into educational attainment groups. See **Appendix 1** for the definitions used to determine assignment to each group. Analyzing wage data by educational attainment is critical to any exploration of wage and industry of employment for the following reasons:

1. Research suggests that employment outcomes and wages may vary by level of educational attainment¹¹;
2. Variation in length of degree program impacts the length of time in the workforce post-degree, which in turn impacts employment outcomes and wages; and
3. Enrollment in school negatively impacts amount of hours available for work each week.

¹¹For example, see:

Baum, Sandy, Jennifer Ma and Kathleen Payea. (2013). Education Pays 2013: The benefits of higher education for individuals and society. College Board.

Hout, Michael. (2012). Social and economic returns to college education in the United States. *Annual Review of Sociology*. 38: 379-400.

Kane, T.J. and Rouse, C. E. (1995). Labor market returns to two-year and four-year college. *The American Economic Review*, 85(3): 600-614

Thomas, Scott L. and Liang Zhang. (2005). Post-baccalaureate wage growth within 4 years of graduation: The effects of college quality and college major. *Research in Higher Education*. Volume 46. 4: 437-459.

Only a small number of individuals who earned their high school diploma through the GED® or NEDP® program continued on to college, and very few of those graduated from college within five years of earning their diploma. All diploma earners who completed a college degree were pooled for analysis in this report. See **Table 2**.

Table 2. High School Diploma by GED® or NEDP®, State of Maryland, 2012-2013, Distribution by Educational Attainment

Educational Attainment	Record Count	Percentage
No College	3,621	71%
Some College	1,279	25%
Still in College	105	2%
College Degree	121	2%
<i>Certificate</i>	29	< 1%
<i>Associate's</i>	65	1%
<i>Bachelor's & Other Degrees</i>	27	< 1%
Total	5,126	

The majority (60%) of diploma earners were between the ages of 18 and 24 at the time of earning a diploma through the GED® or NEDP® program. Individuals in this group were between 23 years old and 29 years old at the time wages were evaluated five years after earning their diploma. The second largest group (22%) were between the 25 and 34 at the time of diploma attainment, and between the ages of 30 and 39 when wage data were evaluated. See **Table 3**. The age range of this population may mean that diploma earners in this study may have wide variation in years of work experience and/or family structures. The impact of these variations are outside the scope of this report, but should be considered when reviewing results as the population of interest may have very diverse characteristics.

Table 3. High School Diploma by GED® or NEDP®, State of Maryland, 2012-2013, Distribution by Age and Educational Attainment

Educational Attainment	Total GED®/NEDP®	No College	Some College	Still in College	College Degree
18 to 24	3,096	2,019	918	75	84
25 to 34	1,119	851	230	20	18
35 to 44	489	396	74	*	*
45 to 64	380	327	46	*	*
65 and over	12	*	*	*	*
Unknown	30	*	*	*	*
Total	5,126	3,621	1,279	105	121

*To protect student privacy, values of 10 or fewer are masked. Additional values are masked to prevent calculating masked values when group totals and sub-totals are provided.

ANALYSIS AND RESULTS

Question 1. Wages Earned Five Years after Earning a Diploma through GED® or NEDP®

This section outlines the approach used to analyze wage data, calculate median quarterly wages, and construct income bands for GED® or NEDP® diploma earners five years after attaining the diploma.

Methodology

The diploma earners included in the wage analysis were selected by using the U. S. Census Bureau Stable or Full-Quarter Employment Methodology (referenced as Full-Quarter throughout this report)¹². This methodology excluded individuals from analysis who did not have wage data in the quarter of interest and the fiscal quarters before and after the quarter of interest. The Full-Quarter methodology was used because it provides a standardized method of determining who to include in the analysis. Restricting the analysis to full-quarter wage earners provided a clear picture of wage outcomes for workers fully engaged in the workforce and eliminated the potential to deflate median wages calculations by including the wages, or lack of wages, for workers who were absent, transient, or not fully engaged in the workforce. Other sections of this report will identify and analyze issues related to diploma earners that may not be fully engaged in the workforce or have limited wage data available for analysis.

For this study, the period of interest was the 20th quarter, or five years, after earning a high school diploma through GED® or NEDP®. Accordingly, diploma earners were included in the wage analysis¹³ if, in addition to having wages in the 20th quarter, they also had wages in the 19th and 21st quarters. The median quarterly wage was then derived from the 20th quarter wage.

GED® and NEDP® completion dates occurred throughout the entire 12 month period of July 2012 to June 2013. As wage data are provided for fiscal quarters, the following methodology was used to align diploma date to the 20th quarter¹⁴. See **Table 4**.

Table 4. GED® or NEDP® Diploma Date to Fiscal Quarter Alignment

GED® /NEDP® Diploma Date	20 th Fiscal Quarter
July, August or September 2012	Q2 2017 (April-May-June)
October, November or December 2012	Q3 2017 (July-August-September)
January, February or March 2013	Q4 2017 (October-November-December)
April, May or June 2013	Q1 2018 (January-February-March)

¹² The Full-Quarter or Stable Employment methodology is utilized by the U. S. Census Bureau to calculate average monthly earnings for individuals engaged in stable employment with any employer. The methodology is applied here to derive quarterly, rather than monthly median earnings. https://lehd.ces.census.gov/doc/QWI_101.pdf.

¹³ Some individuals have wages in a quarter from more than one employer. Those wages were summed and then the sum was used in the median quarterly wage calculation.

¹⁴ This alignment means that diploma earners who completed their diploma in the first or second month of the fiscal quarter have an additional 4 to 8 weeks of time between diploma attainment and the start of the 20th fiscal quarter to secure post-diploma employment as compared to those with diploma attainment at the end of period.

The median quarterly wage was calculated for the entire cohort of diploma earners with full-quarter wages as well as for each educational attainment group. See **Appendix 3** for a comparison of medians for diploma earners with full-quarter employment to that of all diploma earners with wages in quarter 20.

Next, wage bands were constructed to align to the contextual indicators selected for this report. The wages earned in the 20th quarter for those with full-quarter employment were used to assign each diploma earner to one of four wage groups. The four bands provided in **Table 5** were used for a majority of the analysis. Due to small population sizes, some data tables utilize only two or three bands for analysis.

Table 5. Quarterly Wage Bands

Income Band	Wage in 20 th Fiscal Quarter
Less than Minimum Wage	\$1 to \$3,608
Between Minimum Wage and Living Wage	\$3,609 to \$7,840
Between the Living Wage and ACS Wage	\$7,841 to \$10,694
Greater than or equal to the ACS Wage	>= \$10,695

Results

Median Wages by Educational Attainment

There were 2,065 diploma earners, or 40% of all diploma earners, who met the definition for full-quarter employment and were therefore included in wage analysis. See **Table 6**¹⁵. Diploma earners excluded from this calculation include individuals who may have had wage data for some but not all of the quarters required to meet the full-quarter definition, or who may have had wages from a source not reported to the MLDS (contractors, military personnel and federal employees), worked out-of-state, were unemployed, or incarcerated.

Table 6. High School Diploma by GED® or NEDP®, State of Maryland, 2012-2013, Median Quarterly Wages by Educational Attainment, Five Years after Earning Diploma Compared to Living Wage

Educational Attainment	Total	Total with Full-Quarter Employment	% with Full-Quarter Employment	Median Wage for Quarter 20	Variation to Living Wage (\$7,841)
All GED®/NEDP®	5,126	2,065	40%	\$6,692	↓ \$1,149
No College	3,621	1,392	38%	\$6,918	↓ \$923
Some College	1,279	567	44%	\$6,043	↓ \$1,798
Still in College	105	54	51%	\$6,092	↓ \$1,749
College Degree	121	52	43%	\$9,230	↑ \$1,389

Overall, the median quarterly wage for all GED® or NEDP® diploma earners with full-quarter employment was \$6,692 in the 20th quarter. This quarterly wage was approximately \$3,000 above the quarterly minimum wage, \$1,200 below the quarterly living wage¹⁶ and \$4,000 below the quarterly ACS wage¹⁷.

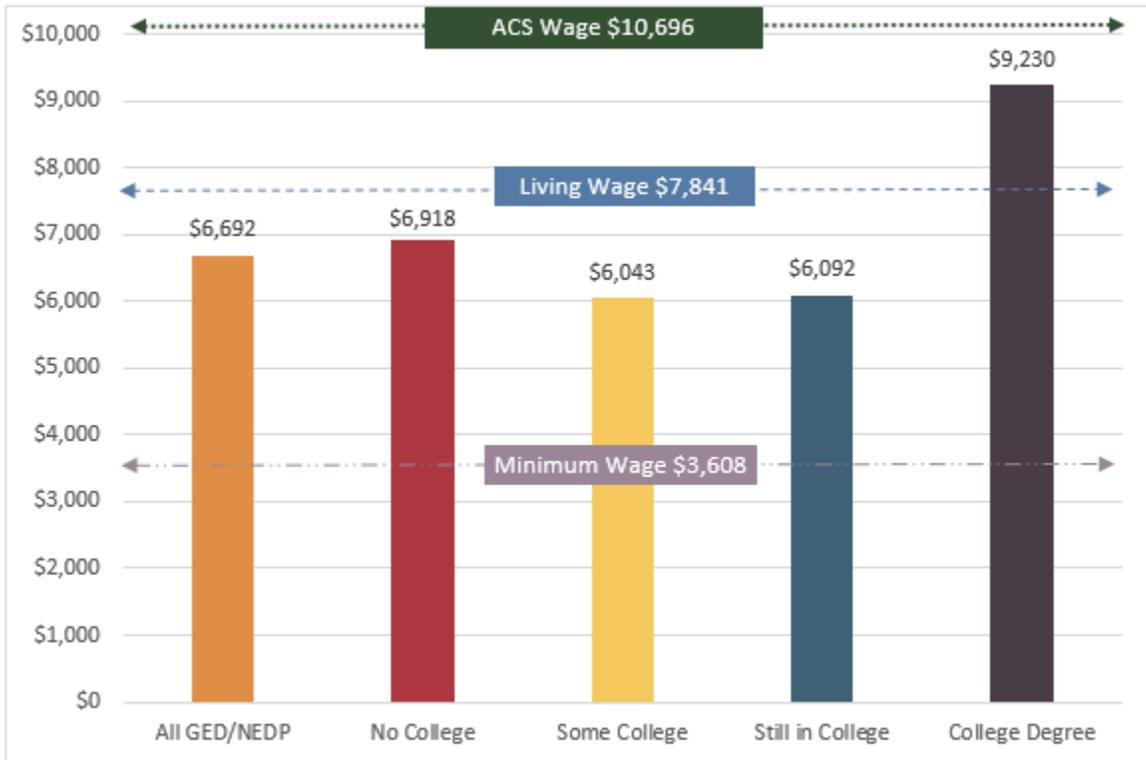
This result was not uniform across all educational attainment groups. See **Table 6** and **Chart 1**. GED® or NEDP® diploma earners who did not continue to college, those with some college, and those still in college had a median quarterly wage that fell below the quarterly living wage. Those with a college degree had a median quarterly wage above the quarterly living wage. The median quarterly wage for all educational attainment groups was above the quarterly minimum wage by \$2,500 to \$5,500.

¹⁵ Wages are actual for Q2 2017, Q3 2017, Q4 2017 and Q1 2018 and not inflation adjusted to current day values. If an individual had more than one source of wages for the period those sources were summed to a personal quarterly wage and that value was used in determining the median.

¹⁶ Glasmeier, Amy K. (2019). [Living Wage Calculator](#). Massachusetts Institute of Technology.

¹⁷ United States Census Bureau. (2016). 012-2016 American Community Survey 5-Year Estimates. U.S. Census Bureau's American Community Survey Office.

Chart 1. High School Diploma by GED® or NEDP®, State of Maryland, 2012-2013, Median Quarterly Wages by Educational Attainment, Five Years after Earning Diploma Compared to Wage Indicators



Of the three educational attainment groups below the quarterly living wage, the *No College* group, which presumably went directly into the workforce, had a median quarterly wage that was \$900 more than the other two groups and about \$1,000 below the quarterly living wage. Further, as may be expected, students in the *Still in College* group fell below the living wage which most likely reflects that these diploma earners are working in a part-time capacity to prioritize their education. These students may have a portion of their living expenses covered by their parents or be receiving federal, state or institutional financial aid to cover their living expenses.

Perhaps unexpected was the median quarterly wage for the *Some College* group. This group enrolled in college for at least one term, but after five years did not earn a degree and were no longer enrolled. The median quarterly wage for this group was approximately \$1,800 below the quarterly living wage, nearly double that of those who never went to college. This low median wage may result from a delayed entry into career track employment while attempting college. The lack of college degree combined with a delayed entry to the labor market may have reduced starting wages, and may possibly impact lifetime earnings.

The median quarterly wage for the *College Degree* group was not only above the quarterly living wage by approximately \$1,400, it is also fell within about \$1,400 of the quarterly ACS wage for all workers in the State of Maryland. Diploma earners in this group completed a Certificate, Associate's, Bachelor's or Other Degree within five years of diploma attainment.

Whether the earnings gaps between the educational attainment groups persists, narrows or widens will be determined as additional times passes in the workforce. Further, given the wide range in age for GED® or NEDP® diploma earners it is difficult to predict how obtaining a diploma well past age 18 will impact lifetime earnings. The majority of GED® or NEDP® diploma earners were between the ages of 18 to 23 at the time they earned their diplomas, placing them between 23 and 28 years old at the point of wage evaluation, or having approximately 40 years remaining in the workforce until retirement. GED® or NEDP® diploma earners that fell into this age group and did not earn a college degree (*No College*) appear to be on pace to earn \$1 million in their lifetime, while those in this age group with a college degree (*College Degree*) appear to be on pace to earn \$1.5 million in their lifetime,¹⁸ both of which align to research¹⁹ on the financial returns to education.

Wage Bands by Educational Attainment

Another way to analyze wages five years after GED® or NEDP® attainment is to determine the number of GED® or NEDP® diploma earners with wages below the minimum wage, between the minimum wage and the living wage, between the living wage and the ACS wage, and at or above the ACS wage. The median quarterly wage identifies the quarterly wage for the person in the exact middle of a population; half the records in that population have a quarterly wage above this value, and half the records have a quarterly wage below this value. Identifying the number of GED® or NEDP® diploma earners with quarterly wages in these four categories helps quantify the number of GED® or NEDP® diploma earners that are engaged in the workforce at a level that provides for or exceeds the basic cost of living in Maryland.

Overall 19% of all GED® or NEDP® diploma earners with full-quarter employment fell below the quarterly minimum wage while 42% fell between the minimum wage and the living wage. Another 19% had wages that were above the quarterly living wage, but, lower than the quarterly ACS wage. Finally, only 20% had wages at or exceeding the quarterly ACS wage. Collectively, this means 39% of all GED® or NEDP® diploma earners with full-quarter employment had quarterly wages at or above the living wage while 61% were below the quarterly living wage. See **Table 7**.

¹⁸ Projected lifetime earnings are based on the constructing an annual wage from the group median and multiplying it by the estimated 40 years remaining in the workforce for each education level.

¹⁹ For example, Baum, Sandy, Jennifer Ma and Kathleen Payea. (2013). [Education Pays 2013: The benefits of higher education for individuals and society](#). College Board.

Table 7. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Diploma Earners by Wage Bands for All, No College and Some College, Five Years after Earning Diploma

Education Level	Total with Full-Quarter Wage	Below Minimum Wage	% Below Minimum Wage	Between Minimum Wage and Living Wage	% Between Minimum Wage and Living Wage	Between Living Wage and ACS Wage	% Between Living Wage and ACS Wage	Above ACS Wage	% Above ACS Wage
All GED®/NEDP® Completions	2,065	402	19%	860	42%	397	19%	406	20%
No College	1,392	247	18%	569	41%	272	20%	304	22%
Some College	567	135	24%	251	44%	105	19%	76	13%

Note: To protect student privacy, values of 10 or fewer are masked. This resulted in the Still in College and College Degree groups being omitted due to suppression requirements.

Applying this measure also called attention to the difference in outcomes at each educational attainment level. See **Table 7**. Almost three-quarters (68%) of the GED® or NEDP® diploma earners in the *Some College* group fell into the wage bands *below minimum wage* (24%) and *between minimum and below living wage* (44%). This is seven percentage points higher than the overall group (61%) which was 19% and 42% respectively. Comparatively, 59% of the *No College* group fell into these two bands, with 18% and 41% respectively, two percentage points below the overall group rate.

Suppression requirements restricted analysis and discussion of the distributions of the *Still in College* and *College Degree* groups in the four wage bands. To provide insight into the outcomes for these two groups, analysis is also provided for all GED®/NEDP® diploma earners based upon two wage bands: *below living wage* and *above living wage*. See **Table 8**. The number of GED®/NEDP® diploma earners with quarterly wages above the living wage in *College Degree* group, was nearly double that of all other groups, at 62%. The *Still in College* group had the smallest distribution in the above living wage band, most likely reflective of their student status. The *Some College* group again demonstrated that this group, five years after diploma attainment, lagged behind those who did not attempt college. The percentage of the *No College* group with quarterly wages below the living wage was 59%, nine percentage points lower than the *Some College* group.

Table 8. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Diploma Earners by Wage Band and Educational Attainment, Five Years after Earning Diploma

Education Level	Total with Full-Quarter Wage	Below Living Wage	% Below Living Wage	Above Living Wage	% Between Above Living Wage
All GED®/NEDP® Completions	2,065	1,262	61%	803	39%
No College	1,392	816	59%	576	41%
Some College	567	386	68%	181	32%
Still in College	54	40	74%	14	26%
College Degree	52	20	38%	32	62%

The below the living wage population was divided into two groups: *below minimum wage* and *above minimum wage but below living wage* for further analysis. See **Table 9**. Overall, two-thirds of those in the *below the living wage* group had a quarterly wage above the minimum wage, with a median of \$5,859, but approximately \$2,000 below the quarterly living wage. This means that, while most of the diploma earners in the *below living wage* group were above the minimum wage, they were still well below the quarterly wage required to cover the basic cost of living in Maryland. The overall quarterly median wage for those that fell below the minimum wage is \$2,215, which is \$1,400 below the quarterly minimum wage. Effectively, a third of individuals with wages below the living wage had wages that not only fell below the living wage, but, were not even equivalent to working a minimum wage job 30 hours a week. This pattern was present for both the *No College* and *Some College* groups. Due to small population sizes, the distributions for the *Still in College* and *College Degree* groups cannot be provided; however, the median quarterly wages are similar to that of the overall group and each subgroup.

Table 9. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Diploma Earners with Wages Below Minimum Wage and Living Wage by Educational Attainment, Five Years after Earning Diploma

Education Level	Full-Quarter Wage Below Living Wage	Below Minimum Wage < \$3,608			Between Minimum and Living Wage \$3,608 to \$7,841		
		#	%	Median Quarter Wage	#	%	Median Quarterly Wage
All GED®/NEDP® Completions	1,262	402	32%	\$2,215	860	68%	\$5,859
No College	816	247	30%	\$2,233	569	70%	\$5,854
Some College	386	135	35%	\$2,116	251	65%	\$5,738
Still in College	40	*	*	\$2,437	*	*	\$6,100
College Degree	20	*	*	\$2,530	*	*	\$6,059

*To protect student privacy, values of 10 or fewer are masked.

Finally, the median quarterly wage was derived to provide additional insight into the wages for three wage bands and all educational attainment group. See **Chart 2**. The median quarterly wage for those in the *Less than Living Wage* band was not just below the living wage, it is several thousand dollars below the living wage. Almost 50% of the overall GED® or NEDP® diploma earners in each educational attainment group fell in this band. Conversely, the median quarterly wage for those above the *Greater than the ACS Wage* band and those in the middle band were both several thousand dollars above the lower limit of each band (\$10,696 ACS wage and \$7,841 living wage). In fact, the median quarterly wage in the middle income band was only about \$1000 to \$1500 less than the lower limit of the *Greater than the ACS Wage*. This indicates that the earnings disparity between those in the *Less than Living Wage* band and the other two bands is much greater than the overall median suggests. This aligns with the data presented in **Table 9** that demonstrates some diploma earners in this lower wage band are not earning wages that even rise to the level of a 30 hour a week minimum wage job. Further, the median

wage in each band showed little variation across educational attainment groups. Simply, those that are above the living wage are above it regardless of educational attainment. The small population size for these groups limits the conclusions that can be drawn from the data; additional analysis is needed to understand the relationship between GED® or NEDP® diploma attainment, subsequent education and earnings.

Chart 2. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Median Quarterly Wages by Wage Band and Educational Attainment, Five Years after Earning Diploma



*To protect student privacy, values of 10 or fewer are masked.

It is also important to consider that 60% of GED® or NEDP® diploma earners did not have full-quarter earnings five years after diploma attainment. This population is excluded from this analysis as their irregular wage data at the five year mark makes it difficult to analyze and interpret. It is possible these individuals had employment out-of-state, with the federal government, as contractors or in positions not subject to UI wage reporting. It is also possible these individual had chronic unemployment or were incarcerated for all or some portion of the five year period after earning the GED®/NEDP®. See **Appendix 2** for a discussion on wage visibility and its implications for this report.

Question 2. Industry of Employment Five Years after Earning a Diploma through GED® or NEDP®

This section outlines the approach used to analyze the industry of employment and corresponding wages for GED® or NEDP® diploma earners five years after diploma attainment.

Methodology

The industry of employment was determined by evaluating the North American Industry Classification System (NAICS) code reported with each wage record. NAICS codes were grouped according to standard reporting categories.²⁰ The U. S. Census Bureau Full-Quarter Employment Methodology²¹ was used as a basis for selecting GED® or NEDP® diploma earners to include in the analysis with the added requirement that they must have been employed by the same employer for the nine month period before deriving median wage calculations for the 20th quarter²² (referenced as Same-Employer throughout this report).

Results

The Full-Quarter Employment with Same Employer Methodology yielded 1,541 GED® or NEDP® diploma earners. This is 30% of all GED® or NEDP® diploma earners, but 75% of all GED® or NEDP® diploma earners with full quarter employment. See **Table 10**. This means that 75% of GED® or NEDP® diploma earners with full-quarter employment are employed by the same employer for the all three fiscal quarters; only 25% of GED® or NEDP® diploma earners with full quarter employment changed employers at least once during this period.

Table 10. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Full-Quarter and Same-Employer, Five Years after Earning Diploma

All GED®/NEDP® Completions	Total with Full-Quarter Wage	Total with Full-Quarter Same-Employer Wage	% of All GED®/NEDP® Completions with Full-Quarter Same-Employer Wages	% of All Full-Quarter GED®/NEDP® Completions Same-Employer Wages
5,126	2,065	1,541	30%	75%

²⁰ The 20 NAICS codes were grouped based upon industry sector as aligned to Bureau of Labor Statistics and U.S. Statistical Agencies Office of Management and Budget (Federal), Economic Classification Policy Committee.

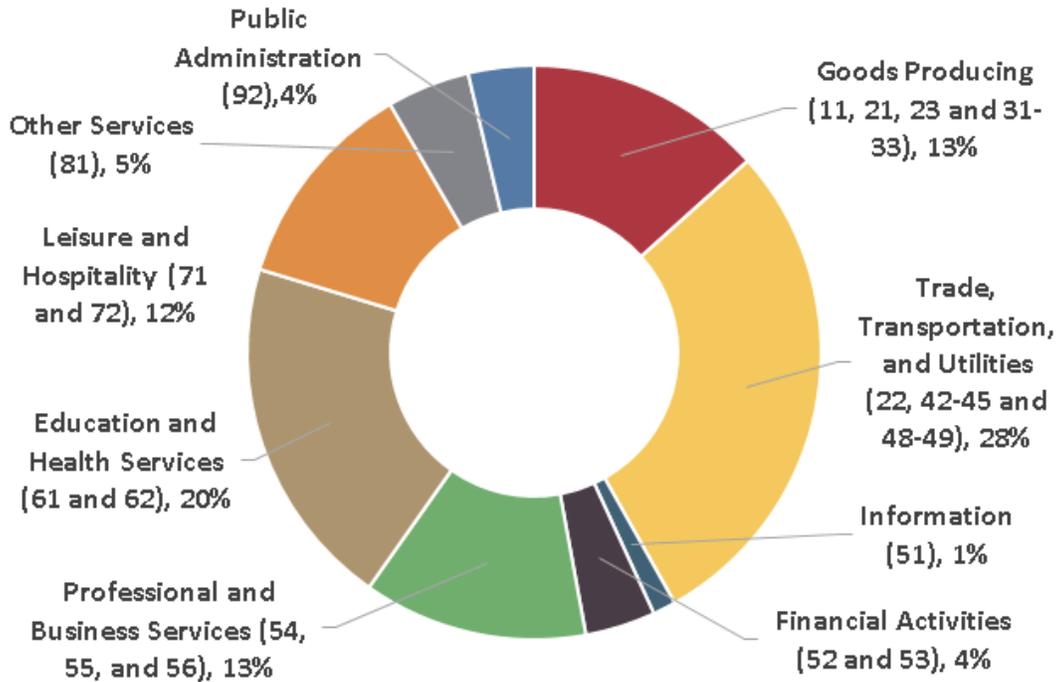
²¹ The Full-Quarter Employment (Stable) methodology is utilized by the U. S. Census Bureau to calculate average monthly earnings for individuals engaged in stable employment with the same employer. The methodology applied here derives quarterly, rather than monthly, median earnings.

https://lehd.ces.census.gov/doc/QWI_101.pdf.

²² For the NAICS quarterly median wage calculation, some individuals had wages in the quarter from more than one employer and more than one NAICS. Only wages from the employer that covered all three quarters were used in median wage calculations.

The single largest Same-Employer sub-sector was *Trade, Transportation and Utilities* with of 28% GED® or NEDP® diploma earners. *Education and Health Services* (20%), *Goods Production* (13%), *Professional and Business Services* (13%), and *Leisure and Hospitality* (12%) were the other four Same-Employer sub-sectors with 12% or more GED® or NEDP® diploma earners. See **Figure 1**.

Figure 1. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Industry of Employment, Five Years after Earning Diploma



Collectively, 73% of Same-Employer GED® or NEDP® diploma earners were employed in the Service Providing sector. See **Table 11**. Three of the eight sub-sectors within the Service Providing sector had a median quarterly wage above the living wage. Those three sectors employed only 10% of the Same-Employer GED® or NEDP® diploma earners in the Service Providing sector. The remaining 90% were employed in sectors with a median quarterly wage below the living wage.

Table 11. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Industry of Employment and Median Quarterly Wages, Five Years after Earning Diploma Compared to Living Wage

Sector	Total with Full-Quarter Wage	Median Wage for Quarter 20	Variation to Living Wage (\$7,841)
Goods-Producing			
Natural Resources and Mining (11 and 21)	n/a	n/a	n/a
Goods Production (23, 31, 32, 33)	206	\$10,145	↑ \$2,304
Service Providing			
Trade, Transportation, and Utilities (22, 42, 43, 44, 45, 48, 49)	439	\$6,822	↓ \$1,091
Information (51)	20	\$8,032	↑ \$191
Financial Activities (52, 53)	61	\$9,655	↑ \$1,814
Professional and Business Services (54, 55, 56)	195	\$7,493	↓ \$348
Education and Health Services (61, 62)	307	\$7,390	↓ \$451
Leisure and Hospitality (71, 72)	184	\$5,141	↓ \$2,701
Other Services (81)	72	\$6,645	↓ \$1,197
Public Administration (92)	57	\$9,725	↑ \$1,884
Total	1,541		

While the median quarterly wage was below the living wage in five sub-sectors, overall, 46% of Same-Employer GED® or NEDP® diploma earners had a quarterly wage that was at or above the living wage. See **Table 12**. The percentage of diploma earners in each NAICS with median quarterly wages above the living wage varied from a low of 18% in *Leisure and Hospitality* to a high of 75% in *Goods Production*. In only four of the nine sub-sectors did the majority of Same-Employer GED® or NEDP® diploma earners have a quarterly wage at or above the living wage.

Table 12. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Industry of Employment and Total at or above Living Wage, Five Years after Earning Diploma

Sector	Total with Full-Quarter Wage	Total with Quarter Wage at or above Living Wage (\$7,841)	% at or above Living Wage
Goods-Producing			
Natural Resources and Mining (11 and 21)	n/a	n/a	
Goods Production (23, 31, 32, 33)	206	154	75%
Service Providing			
Trade, Transportation, and Utilities (22, 42, 43, 44, 45, 48, 49)	439	180	41%
Information (51)	20	10	50%
Financial Activities (52, 53)	61	41	67%
Professional and Business Services (54, 55, 56)	195	94	48%
Education and Health Services (61, 62)	307	130	42%
Leisure and Hospitality (71, 72)	184	33	18%
Other Services (81)	72	27	38%
Public Administration (92)	57	38	67%
Total	1,541	707	46%

The largest sub-sector of Same-Employer GED® or NEDP® diploma earners, *Trade, Transportation and Utilities*, not only had a median quarterly wage below the living wage, but, only 41% of all GED® or NEDP® diploma earners employed in this sub-sector had a quarterly wage at or above the living wage. This means that 12% of all Same-Employer GED® or NEDP® diploma earners that had a median quarterly wage below the living wage were employed in this NAICS. Similarly, in the second largest Same-Employer sub-sector, *Education and Health Service*, only 41% of all GED® or NEDP® diploma earners had a quarterly wage at or above the living wage, accounting for another 17% of the total Same-Employer GED® or NEDP® diploma earners with wages below the living wage. Conversely, the third largest Same-Employer sub-sector, *Goods Production*, had a median quarterly wage above the living wage and 75% of GED® or NEDP® diploma earners employed in this sector had a quarterly wage at or above the living wage, accounting for only 3% of the total Same-Employer GED® or NEDP® diploma earners with wages below the living wage.

Finally, this section examines the variation in Same-Employer median quarterly wages by educational attainment. See **Table 13**. The three sub-sectors with the largest proportion of Same-Employer GED® or NEDP® diploma earners in the *No College* group were *Trade, Transportation, and Utilities, Education and Health Services, and Goods Production*. The median quarterly wage for *Goods Production* was well above the living wage, while the median quarterly wage was slightly below the living wage for the others.

Table 13. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Largest Employers and Median Quarterly Wage by Educational Attainment, Five Years after Earning Diploma

Educational Attainment	Sector of Employment	Median Quarterly Wage	Sector of Employment	Median Quarterly Wage	Sector of Employment	Median Quarterly Wage
No College	Trade, Transportation, and Utilities	\$7,038 total=319	Education and Health Services	\$7,403 total=187	Goods Production	\$10,258 total=171
Some College	Trade, Transportation, and Utilities	\$6,798 total=107	Education and Health Services	\$7,074 total=103	Leisure and Hospitality	\$4,959 total=*
Still in College	Trade, Transportation, and Utilities	\$4,461 total=*	Goods Production	\$10,311 total=*	Leisure and Hospitality	\$4,637 total=*
College Degree	Education and Health Services	\$9,698 total=14	Professional and Business Services	\$9,745 total=*	Public Administration	\$12,648 total=*

*To protect student privacy, values of 10 or fewer are masked.

Trade, Transportation, and Utilities also had the largest proportion of *Some College* and *Still in College* GED® or NEDP® diploma earners. The median quarterly wage for the *Some College* group was about \$300 less than that of the *No College* group, while the median quarterly wage for the *Still in College* group was about \$2,500 less, perhaps reflecting that group was pursuing part-time employment while continuing their college educations. *Education and Health Services* was the second largest sub-sector for the *Some College* group. And, like the *No College* group, the median quarterly was about \$900 less than the living wage. Overall, the *No College, Some College* and *Still in College* groups only had two of six sub-sectors with a median quarterly wage above the living wage. Only the *College Degree* group had median quarterly wages for the largest sub-sectors all above the living wage. See **Appendix 4** for industry of employment, median quarterly wages, and living wage comparison²³ by educational attainment.

²³ Wages are actual for Q2 2017, Q3 2017, Q4 2017 and Q1 2018 and not inflation adjusted to current day values.

CONCLUSIONS AND IMPLICATIONS

The analysis in this report demonstrates that outcomes, five years after earning a high school diploma through GED® or NEDP®, vary greatly by educational attainment and industry sector. The results are consistent with national data available on earnings by educational attainment level²⁴. The analysis must be interpreted with caution as limitations on MLDS System data result in gaps in wage data. It is impossible to speculate on how the analysis may change if complete wage data were available on all GED® or NEDP® diploma earners of 2012-2013. **Table 14** below summarizes the variation in wage data available for analysis:

Table 14. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Data Available for Analysis

Method	Definition	Count	Percent
Population of Interest	GED® or NEDP® Diploma Earners (July 1, 2012 to June 30, 2013)	5,126	
Wages in Quarter 20	GED® or NEDP® Diploma Earners with wages in Q20 or fiscal quarter 20 of 2017	2,506	49%
Full-Quarter Employment	GED® or NEDP® Diploma Earners (July 1, 2012 to June 30, 2013) with wage data in Q19, Q20 and Q21	2,065	40%
Full-Quarter Employment – Same Employer	GED® or NEDP® Diploma Earners (July 1, 2012 to June 30, 2013) with wage data in same NAICS	1,541	33%
Wage Visibility Overall	GED® or NEDP® Diploma Earners (July 1, 2012 to June 30, 2013) with at least one quarter of wage data in the 5 year period.	4,203	82%
Wage Visibility – Quarter Average	The average number of GED® or NEDP® Diploma Earners (July 1, 2012 to June 30, 2013) with wage data in any one of the twenty fiscal quarters	2,439	48%

It is important to note that the analysis presented here was conducted across a population that may be in very different career stages. The majority of GED® or NEDP® diploma earners were between the ages of 18 and 24, and at the early stages of a career. For those that continued to college, many would have only been in the workforce for 1 to 3 years after college graduation. Even for the GED® or NEDP® diploma earners who did not continue to college, many may have been exploring career options and training programs, including completing licensure requirements or apprenticeships, which may depress wages during the first two or three years of employment after GED® or NEDP® attainment. Much of the analysis was based upon what were likely to be entry level wages and therefore it is difficult to predict if the wages gaps present between educational groups will widen or narrow as this cohort progresses through their careers.

²⁴ For example, Baum, Sandy, Jennifer Ma and Kathleen Payea. (2013). [Education Pays 2013: The benefits of higher education for individuals and society](#). College Board.

Interpreting the wage data on the 40% of the population that was age 25 or older poses additional challenges. These individuals may either have work experience that pre-dates earning the GED® or NEDP® diploma that helped bolster their wages or they may have been excluded from fully participating in the workforce due to the lack of a high school degree depressing their wages.²⁵ Those excluded from participating in the workforce until later in life may receive entry level wages post-diploma at a time when they need higher wages to support a family and save for retirement. More analysis is needed to understand the implications of earning a high school diploma through GED® or NEDP® diploma later in life on lifetime earnings.

The analysis presented provides a high-level overview of the earnings outcomes for one cohort of GED® or NEDP® diploma earners five years after diploma attainment. Most students require six years to graduate from college with a bachelor’s degree, so observing students five years after earning a diploma through GED® or NEDP® eliminates a large number of bachelor degree graduates that will complete college one year later. It is difficult to predict if the wage premium that appears to be associated with those that earned a college degree will be still be presented when the pool is expanded to include those who required extended time to complete a college degree. Further, the analysis also fails to account for the relationship between wages and multiple and/or stackable credentials. Some GED® or NEDP® diploma earners in this population obtained multiple associate’s or certificate’s or obtained an associate’s followed by a bachelor’s during the five year period. Additional analysis is required to understand which degree “pays” when a student has multiple degrees or if there is a wage difference between GED® or NEDP® diploma earners with an associate’s and bachelor’s versus a bachelor’s.

Table 15. High School Diploma by GED® or NEDP®, State of Maryland, 2012, and High School Graduates, State of Maryland 2012, Median Quarterly Wage

Educational Attainment	Total	Total with Full-Quarter Employment	% with Full-Quarter Employment	Median Wage for Quarter 20	Variation to Living Wage
All High School Graduates	59,510	27,535	46%	\$5,916	↓ \$1,997
All GED®/NEDP®	5,126	2,065	40%	\$6,692	↓ \$1,149

The results of this study can be compared to those in the Career Preparation Expansion Act Report of 2018 (CPEA). This report explored the earnings outcomes for high school graduates five years after graduation using the same wage and educational attainment methodologies. Both the high school and GED®/NEDP® populations have full-quarter employment at similar rates, 46% and 40% respectively. Both had similar overall median quarterly wages, \$5,916 and \$6,692 respectively. The educational attainment groups in each report also had similar wage outcomes. See **Table 15**. Those who by-passed college experienced higher median quarterly wages than those with *Some College* or those *Still in College*. And, those who completed college degrees were at or above the living wage. See **Table 16**. It

²⁵ The MLDS only includes UI wage data if it is linked to a student record. As a result, the MLDS cannot report on wages an individual may have earned prior to that individual becoming a student. For example, assume X was employed for 10 years before he took the GED® at age 45. Since X did not have a student record until the GED® exam, the MLDS does not contain X’s prior wage history and cannot report on the impact of the GED® on X’s wages.

is important to again note that, while outcomes by educational attainment may appear to be similar, 1) the overall population sizes for these two groups was very different, which may have important implications for the results and 2) the high school graduates population were all of a similar age when exiting high school, the GED®/NEDP® diploma graduates vary in age, work experience, and may have experience a period of incarceration.

Table 16. High School Diploma by GED® or NEDP®, State of Maryland, 2012, and High School Graduates, State of Maryland 2012, Median Quarterly Wage by Educational Attainment

Educational Attainment		Median Wage for Quarter 20	Variation to Living Wage²⁶
All	GED®/NEDP®	\$6,692	↓ \$1,149
	High School Graduates	\$5,916	↓ \$1,997
No College	GED®/NEDP®	\$6,918	↓ \$923
	High School Graduates	\$5,931	↓ \$1,982
Some College	GED®/NEDP®	\$6,043	↓ \$1,789
	High School Graduates	\$5,425	↓ \$2,488
Still in College	GED®/NEDP®	\$6,092	↓ \$1,749
	High School Graduates	\$5,347	↓ \$2,566
College Degree	GED®/NEDP®	\$9,230	↑ \$1,389
College Degree (Certificate)	High School Graduates	\$7,953	↑ \$40
College Degree (Associate's)	High School Graduates	\$7,059	↓ \$854
College Degree (Bachelor's)	High School Graduates	\$9,539	↑ \$1,626
College Degree (Other Degree)	High School Graduates	\$12,074	↑ \$4,161

Another limitation of the analysis is that wage comparisons here are made to overall State of Maryland living wage of \$7,841, something that varies greatly by region. The quarterly living wage according to the MIT Living Wage Calculator in Garrett County is \$5,582 while it is \$9,123 in Montgomery County. This wide variation may mean that median wages and median wages by NAICS, are not necessarily below the living wage when regional variation is factored into the analysis. Additional analysis is needed to determine if the wages experienced by GED®/NEDP® diploma earner are sufficient for the region of residence.

²⁶ The values reported in the Living Wage Calculator were \$30,420 annually in 2016 dollars when the CPEA report was completed. This was divided to a quarterly wage of \$7,605 in 2016 dollars and inflation adjusted to 2017 dollars using the CPI Inflation Calculator provided by the U. S. Department of Labor, Bureau of Labor Statistics which resulted in a living wage of \$7,193 when CPEA was released. The values reported in the Living Wage Calculator have been revised and those values are used throughout this report for GED®/NEDP® outcomes. The variation report here is to the living wage report (\$7,913) in CPEA for high school graduates and \$7,841 for the GED®/NEDP® population.

Finally, it is important to remember that in 2012, as this population was earning a high school diploma through GED® or NEDP®, the impact of the economic recession on unemployment and underemployment was still present in the economy.²⁷ The extended recovery from the recession may impact this analysis in three ways. First, it may mean that there were fewer jobs available in the early part of the analysis, thus, wage visibility may be lower due to scarcity of open positions in the job market rather than individuals employed in positions that are exempt from UI reporting or due to gaps in MLDS wage data. Second, it may mean that wages were lower during the first year or two of the period than in pre-recession periods, something that may curtail life-time earnings. Third, for GED® or NEDP® diploma earners that did not continue to college, this group may have been competing with more experienced and/or college educated individuals for entry-level employment typically available to recent high school graduates or GED®/NEDP® diploma earners. This may have limited the GED® or NEDP® diploma earners' employment opportunities or may have required more frequent job changes to advance careers. It also could have been responsible for depressing wages. Additional research is required to understand both the short-term and long-term impact of the recession on the GED® or NEDP® diploma earners from this period.

Policy Consideration

First, over 1,200 GED® or NEDP® diploma earners have “some college”. This population, almost a 25% of the all of GED® or NEDP® diploma earners, attempted college for the first one to four years after earning their diplomas but stopped attending by the start of year five. This group has the lowest median quarterly wages at \$6,043, almost \$2,000 below the living wage, and, unlike GED® or NEDP® diploma earners that never attended college, these diploma earners may have student loan debt. Providing some type of capstone to an otherwise incomplete college educational experience may help increase the earnings prospects for this group. Potentially, this group may benefit from programs like the Maryland Higher Education Commission's Reverse Transfer initiative or the adult training programs offered by the Maryland Department of Labor.

Second, the data point to another important policy area to explore – the relationship between time to degree and working. Approximately 2% of GED® or NEDP® diploma earners were still pursuing college degrees five years after earning a diploma. The *Still in College* group had a median quarterly wage of \$6,092 or \$2,031 per month five years after earning their diploma. It is possible that additional funding supports could allow this group to focus on college and reduce the need to work, allowing them to graduate sooner, with less debt, and launch into career tracks four years after earning a high school diploma through GED® or NEDP® rather than in five or six years.

Finally, 71% of GED®/NEDP® diploma earners do not attempt college. This population could benefit from completing apprenticeships or other workforce training programs. The Maryland Department of Labor cites that the average annual starting salary for those who complete an apprenticeship is \$50,000.

²⁷ For example, see Abel, Jason R. and Richard Deits (2016). Underemployment in the early careers of college graduations following the great recession. NBER Working Paper #22654.; Oreopoulos, Philip, Till von Wachter, and Andrew Heisz. (2012). The Short- and Long- Term Career Effects of Graduating in a Recession. American Economic Journal: Applied Economics, 4(1): 1-29.

Apprenticeship programs offered by the Maryland Department of Labor are available to high school graduates, including those that fulfill diploma requirements through GED® or NEDP®. Expanding employer participation in registered apprenticeships and strengthening the pipeline from GED®/NEDP® to apprenticeship participation could increase the economic opportunities for this population, particularly those with a history of incarceration, while decreasing reliance on social safety nets that may be required if wages remain at or below the living wage.

APPENDICES

Appendix 1. Educational Attainment Methodology

Educational attainment has the following important implications for workforce outcomes. First, research suggests that employment outcomes and wages may vary by level of educational attainment²⁸. Second, GED®/NEDP® diploma earners in college may be employed in part-time entry-level minimum-wage positions so they can prioritize college; comparatively GED®/NEDP® diploma earners that did not enroll in college may have been available to enter the workforce in full-time career-track employment. Finally, the time to degree widely varies based upon the type the postsecondary degree. Certificate's, Associate's and Bachelor's degree programs are designed to require one, two or four years of full-time study respectively. The length of each program impacts the amount of time graduates may have been in the workforce after earning their college degree. For example, Certificate graduates may enter the workforce three years earlier than Bachelor's degree graduates, while Associate's graduates may enter the workforce two years earlier than Bachelor's degree graduates.

Accordingly, separating the population of interest into groups by educational attainment helps identify wages differences that may occur when using a common point in time (five years after earning a GED®/NEDP® diploma) as a measure for a population who has had different amounts of time in the workforce. These distinctions in educational attainment should not be interpreted as college graduation rates as this report does not provide the starting number of students entering each educational attainment category, only the number of students who obtained each degree, are still enrolled in college or stop attending college without graduating. Reporting on time to degree and college completion rates is outside the scope of this report.

For this report, the following four educational groups were created for wage analysis. See **Figure 1** and **Table 1** for distributions. Education attainment definitions:

1. **No College:** GED® and NEDP® diploma earners without an in-state or out-of-state college enrollment record by the end of spring term 2017.
2. **Some College:** GED® and NEDP® diploma earners enrolled for at least one term between fall 2012 and fall 2016 but who did not earn a postsecondary degree and are not actively enrolled in college in the spring 2017 or fall 2017 terms.
3. **Still in College:** GED® and NEDP® diploma earners enrolled in college in-state or out-of-state in the spring 2017 and/or fall 2017 terms. These graduates may have earned a postsecondary

²⁸For example, see:

Baum, Sandy, Jennifer Ma and Kathleen Payea. (2013). Education Pays 2013: The benefits of higher education for individuals and society. College Board.

Hout, Michael. (2012). Social and economic returns to college education in the United States. *Annual Review of Sociology*. 38: 379-400.

Kane, T.J. and Rouse, C. E. (1995). Labor market returns to two-year and four-year college. *The American Economic Review*, 85(3): 600-614

Thomas, Scott L. and Liang Zhang. (2005). Post-baccalaureate wage growth within 4 years of graduation: The effects of college quality and college major. *Research in Higher Education*. Volume 46. 4: 437-459.

degree by the end of the fall 2016 term; however, they are still actively pursuing additional postsecondary education.

4. **College Degree²⁹**: GED® and NEDP® diploma earners who earned a postsecondary degree by the end of the fall term 2016 and are not enrolled in college in the spring 2017 or fall 2017 terms. This includes the following degrees:
- **Certificate Graduates**
 - **Associate’s Graduates**
 - **Bachelor’s & Other Degrees**

Note, some GED® and NEDP® diploma earners received more than one degree during the five year period. Each diploma earner is counted only once, based upon highest degree attained. For example, if a GED® and NEDP® diploma earners completed an Associate’s degree and then a Bachelor’s degree, the GED® and NEDP® diploma earners is counted in the Bachelor’s category. Other GED® and NEDP® diploma earners completed a degree but were still progressing toward an additional degree, therefore some GED® and NEDP® diploma earners in the Still in College category have already earned a degree.

As GED® and NEDP® diplomas are earned throughout the year. The following matrix provides the alignment of GED®/NEDP® diploma date to the academic period used to evaluate postsecondary degree attainment and the final academic period consider for evaluating if a GED®/NEDP® diploma earner was still enrolled in college. Any GED®/NEDP® diploma earner that did not earn a postsecondary degree in the last academic period of evaluation that was not enrolled in the academic period of the 20th fiscal quarter was considered no longer progressing and classified as Some College.

GED® /NEDP® Diploma Date	Last Academic Period Evaluated for College Degree Attainment	Academic Period at 20th Fiscal Quarter
July, August or September 2012	Fall 2016	Spring 2017
October, November or December 2012	Spring 2017	Fall 2017
January, February or March 2013	Spring 2017	Fall 2017
April, May or June 2013	Fall 2017	Spring 2018

The decision to use these cut-offs for placement into an educational attainment category was made to allow students in each category time to transition from college to workforce and thus provide a more accurate picture of wages and industry of employment after college.

²⁹ Due to small population sizes, the Certificate, Associate’s and Bachelor’s & Other Degrees educational attainment groups have been pooled for wage analysis. A pairwise comparison of means determined there were no statistically significant differences between the quarterly wage means for each group therefore they were combined for analysis.

Appendix 2. Wage Visibility

This section outlines the approach used to analyze wage visibility for GED® or NEDP® diploma earners for the full five year period after diploma attainment. Wage visibility is defined as the number of quarters in which an individual has reported wages for the timeframe of interest. Analyzing wage visibility is an important component of all MLDS Center research. Due to gaps in MLDS employment data, it is not possible to determine which individuals are not working due to unemployment versus those that are not visible in the workforce data due to employment that is not reported to the MLDS Center (which includes self-employed persons, independent contractors, military and federal personnel and out-of-state employees). Nonetheless, understanding how often individuals have wage records provides some clue to understanding workforce engagement. Further, as individuals change jobs over the course of the period of analysis it is possible that the gaps in wage data may be due to changes in type and location of employment rather than due to unemployment.

The first method evaluates overall wage visibility for the five year period. The second method evaluates wage visibility for every fiscal quarter for the five year period. The analysis is provided in as an appendix to offer additional context for the data included in this report and to discussion on how results presented in the report need to be interpreted with caution due to missing or incomplete wage data.

Methodology 1

Wage Visibility Across the Five Year Period

Each GED® or NEDP® diploma earners was evaluated for the full five year period and placed in one of the five mutually exclusive groups based upon the following criteria:

1. **No Visibility (NONE)** – no wages for the entire 20 quarters,
2. **Irregular Visibility (IRRG)** – wages for 25% of the period (1 to 5 quarters)
3. **Intermittent Visibility (INTR)** – wages for 25%-49% of the period (6 to 10 quarters)
4. **Frequent Visibility (FREQ)** – wages for 50%-74% (11 to 15 quarters), or
5. **Continuous Visibility (CONT)** – wages for 75% or more of the period (16 to 20 quarters).

This analysis provides insight into the number of GED® or NEDP® diploma earners that never appear in wage data, those with limited wage data, and those with complete wage data for the full five year period.

Results

At least one quarter of wage data was available for 82% of GED® or NEDP® diploma earners. Only 18% of GED® or NEDP® diploma earners are never visible in the wage data. Of the 82% that are visible, 29% appear in almost every wage quarter (continuous), 17% are frequently visible, 17% are intermittently visible, and 19% are visible in less than 5 quarters of the 5 year period (irregular). This rate of wage visibility is consistent with that of high school graduates for the same time period³⁰. See **Table A**. Note, the distributions in **Table A** represents total number of quarters a GED® or NEDP® diploma earner had wage data, having multiple quarters of waged data does not necessarily represent consecutive periods of employment. Further, having wage data in a quarter does not indicate that a GED® or NEDP® diploma earner worked for the full quarter or worked full-time within a quarter. Employment in the quarter may have been for as little as one day.

Table A. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Wages Visibility for Full Five Year Period

Wage Visibility	All GED®/NEDP® Completions	% Wage Visibility
No Wages for Full Five Years (NONE)	923	18%
Total with Wages	4,203	82%
Irregular (IRRG)	973	19%
Intermittent (INTR)	859	17%
Frequent (FREQ)	885	17%
Continuous (CONT)	1486	29%
Total GED® / NEDP® Completions	5,126	

The distributions provided in **Table A** indicate that almost one-third of the population (CONT) was engaged in the workforce in a way that is visibility for the vast majority of the five year period. This proportion of diploma earners has a long wage history which can be informative for exploring wage trajectories and career tracks over time for those regularly engaged in the Maryland workforce. Another third of GED® or NEDP® diploma earners have such low visibility (NONE + IRRG) that it may suggest that this portion of the population was likely engaged in employment out-of-state, were self-employed, joined the military, worked for the federal government or were incarcerated. If the visible wage periods are at the end of the five year window, it may also represent diploma earners that have recently entered the Maryland workforce after working in a capacity that is not visible, being released from incarceration, or, in the case of those who earned a college degree, diploma earners that were engaged in educational pursuits for the vast majority of the time and are only entering the workforce at the five year benchmark. This proportion of the population provides limited insight into wage trajectories and career tracks as too little wage data exists to be informative.

³⁰ MLDS Center. (2018). *Career Preparation Expansion Act: Annual Report to the General Assembly and Governor Larry Hogan*. Baltimore, MD: Maryland Longitudinal Data System Center. <https://mldscenter.maryland.gov>

Finally, the remaining third (INTR + FREQ) of GED® or NEDP® diploma earners are periodically engaged in the workforce in ways that are visible but do not offer sufficient data to project wage trajectories and explore career paths. This periodic visibility may also indicate these individuals are experiencing chronic unemployment or are in and out of the correctional system. Given the age ranges of some GED® or NEDP® diploma earners it is also possible that some diploma earners have less than the full five years of visibility due to retirement from the workforce.

Table B. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Wages Visibility Categories by Educational Attainment

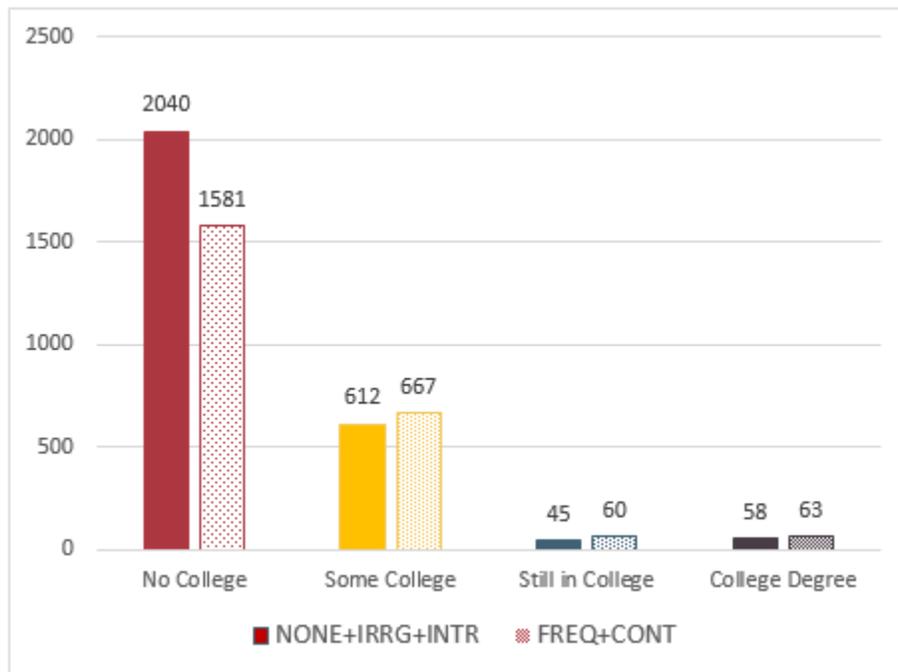
Wage Visibility	Total	NONE	% with NONE	IRRG	% with IRRG	INTR	% with INTR	FREQ	% with FREQ	CONT	% with CONT
All GED®/NEDP® Completions	5,126	923	18%	973	19%	859	17%	885	17%	1,486	29%
No College	3,621	753	21%	717	20%	570	16%	586	16%	995	27%
Some College	1,279	145	11%	218	17%	249	19%	253	20%	414	32%
Still in College	105	11	10%	15	14%	19	18%	23	22%	37	35%
College Degree	121	14	12%	23	19%	21	17%	23	19%	40	33%

The lack of wage data for the *Still in College*, *Some College* and *College Degree* groups may understate workforce engagement as diploma earners in these three groups may be engaged in on-campus employment, such as work-study, that is not subject to reporting UI wage data, enrolled in college out-of-state, working only when returning home over the summer, or working in a sporadic, part-time capacity to prioritize college. Therefore, it is important to consider wage visibility by educational attainment. See **Table B**.

The distributions of wage visibility by educational attainment are similar to those of the overall population with the two notable patterns. The rate of GED® or NEDP® diploma earners in the *No College* group that have no wage visibility (NONE) is nearly double all other educational attainment groups. This may again indicate that those in the *No College* group reflect diploma earners that are working or attending college out-of-state, joined the military, are incarcerated, or pursued other types of employment that do not require reporting for Unemployment Insurance (UI) and therefore do not have wage data within the MLDS System.

The second notable pattern is the rate at which GED® or NEDP® diploma earners in the *Still in College*, *Some College* and *College Degree* groups have continuous wage visibility. Almost one-third of the 1,486 GED® or NEDP® diploma earners with continuous wages are engaged in college for some portion of the five year period following diploma attainment. Further, the five year wage visibility rate for the GED® or NEDP® diploma earners that continue on to college is split between high visibility (FREQ + CONT) and low visibility (NONE + IRRG + INTR). See **Chart A**. This pattern may have important implications for analysis as diploma earners pursuing a college education are not necessarily fully engaged in career-track positions in the workforce and therefore may have lower wages. Alternatively, the high wage visibility for a large portion of these three groups may clarify why, five years after diploma attainment, so few GED® or NEDP® diploma earners finish a college degree. Many may be engaged in the workforce at a rate that makes it difficult to devote sufficient time to college course work.

Chart A. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Wages Visibility Categories by Educational Attainment



Methodology 2

Quarterly Wage Visibility Full Five Year Period

Wage data were also analyzed for each fiscal quarter after earning a GED® or NEDP® diploma to determine the number of diploma earners with wage data in each fiscal quarter. This analysis helps identify changes in visibility that may be due to seasonal employment, overall changes in economic conditions, or other factors.

Results

The results of the analysis are presented in **Table C**. The number GED® or NEDP® diploma earners with wage data in any one quarter was somewhat consistent for the majority of the five year period, ranging from a low of 40% to a high of 50% with an average of 48%. This rate of wage visibility is consistent with that of high school graduates for the same time period³¹.

Table C. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Wage Visibility by Quarter for Full Five Year Period

Year	Fiscal Quarter	GED®/NEDP® Completions with Wages in Quarter	% of All GED®/NEDP® Completions with Wages in Quarter
Year 1	Q1	2,049	40%
	Q2	2,276	44%
	Q3	2,324	45%
	Q4	2,338	46%
Year 2	Q5	2,348	46%
	Q6	2,407	47%
	Q7	2,414	47%
	Q8	2,401	47%
Year 3	Q9	2,448	48%
	Q10	2,461	48%
	Q11	2,509	49%
	Q12	2,524	49%
Year 4	Q13	2,548	50%
	Q14	2,540	50%
	Q15	2,536	49%
	Q16	2,538	50%
Year 5	Q17	2,544	50%
	Q18	2,541	50%
	Q19	2,533	49%
	Q20	2,506	49%
Total		5,216	

As with the previous method, it is also important to explore this pattern for each educational attainment group. See **Table D**. The wage visibility results for *No College* ranged between 38% and 47% for the five year period. Comparatively, the lowest visibility for GED® or NEDP® diploma earners who continued on

³¹ MLDS Center. (2018). *Career Preparation Expansion Act: Annual Report to the General Assembly and Governor Larry Hogan*. Baltimore, MD: Maryland Longitudinal Data System Center. <https://mldscenter.maryland.gov>

to college was 43% (*Some College, Q1*), while the highest visibility was 62% (*Still in College, Q20*). While the *No College* group represents 70% of all GED® or NEDP® diploma earners in this population, the 30% of the population that continued on to college, whether they graduated or not, had a higher rate of visibility in the data for every quarter of the five year period.

On the surface, this patterns seems contradictory as diploma earners engaged in college may be expected to be working at a lower rate than those who do not continue to college; however, it confirms the prior analysis, GED® and NEDP® diploma earners appear to be working while in college, which could have implications for college completion, while the *No College* group are most likely to be engaged in employment in ways that are not visible in UI wage data or potentially incarcerated. As with the prior analysis, it demonstrates the importance of exploring wages by educational attainment.

Table D. High School Diploma by GED® or NEDP®, State of Maryland, 2012, Wage Visibility by Quarter for Full Five Year Period by Educational Attainment

Year	Fiscal Quarter	% of All GED®/NEDP® with Wages in Quarter	% of No College with Wages in Quarter	% of Some College with Wages in Quarter	% of Still in College with Wages in Quarter	% of College Degree with Wages in Quarter
Year 1	Q1	40%	38%	43%	45%	45%
	Q2	44%	43%	47%	52%	51%
	Q3	45%	44%	48%	50%	50%
	Q4	46%	44%	49%	47%	54%
Year 2	Q5	46%	44%	50%	54%	52%
	Q6	47%	45%	52%	49%	50%
	Q7	47%	45%	53%	49%	53%
	Q8	47%	45%	52%	46%	53%
Year 3	Q9	48%	45%	53%	56%	54%
	Q10	48%	45%	55%	56%	57%
	Q11	49%	47%	54%	59%	55%
	Q12	49%	46%	56%	56%	55%
Year 4	Q13	50%	47%	57%	59%	54%
	Q14	50%	46%	57%	67%	56%
	Q15	49%	46%	57%	60%	55%
	Q16	50%	47%	57%	60%	51%
Year 5	Q17	50%	47%	57%	56%	55%
	Q18	50%	47%	55%	57%	60%
	Q19	49%	47%	55%	58%	60%
	Q20	49%	47%	54%	62%	55%
Averages		48%	45%	53%	55%	54%

Appendix 3. Median Wage Calculation Analysis

High School Diploma by GED® or NEDP®, State of Maryland, 2012, Median Quarterly Wages by Educational Attainment, Five Years after Earning Diploma with and without Full-Quarter Employment

This table presents the number of GED®/NEPD diploma earners with wages in Q20 and those with full-quarter employment (wages in Q19, Q20 and Q21). The Full Quarter Employment methodology reduced the diploma earners included in the median wage calculation by 7 percentage points overall and between 10 and 14 percentage points for each educational attainment group. Restricting analysis to diploma earners with full-quarter employment resulted in a slightly higher median quarterly wage overall and for each educational attainment group.

Education Level	Total	Total with Wages in Quarter 20th	% of Group with Wages in Q20	Median Wage for Quarter 20	Total with Full-Quarter Employment	% of Group with Full-Quarter Employment	Median Wage for Quarter 20	Variation between Q20 Only Wage and Full-Quarter Wage
All GED®/NEPD®	5,126	2,506	47%	\$5,975	2,065	40%	\$6,692	\$717
No College	3621	1,686	54%	\$6,215	1,392	44%	\$6,918	\$703
Some College	1279	689	62%	\$5,288	567	51%	\$6,043	\$755
Still in College	105	65	66%	\$5,292	54	52%	\$6,092	\$800
College Degree	121	66	55%	\$8,156	52	43%	\$9,230	\$1,074

Appendix 4. NAICS by Educational Attainment Analysis

High School Diploma by GED® or NEDP®, State of Maryland, 2012, Industry of Employment and Median Quarterly Wages, Five Years after Earning Diploma for Select Educational Attainment Groups Compared to the Living Wage

Overall, and for both the *No College* and *Some College* groups, four NAICS codes had median quarterly wages above the living wage. In these NAICS, the median quarterly wage was slightly higher for three NAICS for the *No College* group than the *Some College* group. In the five NAICS with a median quarterly wage below the living wage, the wage for the *No College* group was slightly higher than that of the *Some College* group.

Industry	All GED®/NEDP®			No College			Some College		
	Total with Full-Quarter Wages	Median Quarterly Wage	Total at or above Living Wage (\$7,841)	Total with Full-Quarter Wages	Median Quarterly Wage	Total at or above Living Wage (\$7,841)	Total with Full-Quarter Wages	Median Quarterly Wage	Total at or above Living Wage (\$7,841)
Goods-Producing									
Natural Resources and Mining (11 and 21)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Goods Production (23, 31, 32, 33)	206	\$10,139^	154	171	\$10,258^	129	25	\$9,980^	*
Service Providing									
Trade, Transportation, and Utilities (22, 42, 43, 44, 45, 48, 49)	439	\$6,822	180	319	\$7,038	137	107	\$6,798	*
Information (51)	20	\$8,032^	10	*	\$8976^	*	*	\$7,683^	*
Financial Activities (52, 53)	61	\$9,655^	41	44	\$9,539^	27	*	\$9,442^	*
Professional and Business Services (54, 55, 56)	195	\$7,493	94	135	\$7,677	67	47	\$7,456	*
Education and Health Services (61, 62)	307	\$7,390	130	187	\$7,403	79	103	\$7,074	41
Leisure and Hospitality (71, 72)	184	\$5,141	33	110	\$5,252	23	*	\$4,959	*
Other Services (81)	72	\$6,645	27	54	\$6,802	*	*	\$5,383	*
Public Administration (92)	57	\$9,725^	38	35	\$9,486^	21	*	\$9,509^	*

* To protect student privacy, values of 10 or fewer are masked. Additional values are masked to prevent calculating masked values when group totals and sub-totals are provided. Due to small population size, analysis of Still in College and College Degree was omitted.

^Median quarterly wage is above the Living Wage.